SEQUENCE LISTING

<110> PARANHOS-BACCALA, Glaucia
       KOMURIAN-PRADEL, Florence
       BEDIN, Frederic
       SODOYER, Mireille
       OTT, Catherine
       MALLET, Francois
       PERRON, Herve
       MANDRAND, Bernard

<120> RETROVIRAL NUCLEIC MATERIAL AND NUCLEOTIDE FRAGMENTS, IN
       PARTICULAR ASSOCIATED WITH MULTIPLE SCLEROSIS AND/OR RHEUMATOID
       ARTHRITIS, FOR DIAGNOSTIC, PROPHYLACTIC AND THERAPEUTIC USES

<130> 103514

<140> US/09/319,156
<141> 1999-11-02

<150> PCT/FR98/01460
<151> 1998-07-07

<150> FR/97/08816
<151> 1997-07-07

<160> 45

<170> PatentIn version 3.2

<210> 1
<211> 34
<212> DNA
<213> MSRV

<400> 1
gactcgctgc agatcgattt tttttttttt tttt   34

<210> 2
<211> 30
<212> DNA
<213> MSRV

<400> 2
gccatcaagc cacccaagaa ctcttaactt   30

<210> 3
<211> 30
<212> DNA
<213> MSRV

<400> 3
ccaatagcca gaccattata tacactaatt   30

<210> 4
<211> 310
<212> DNA
<213> MSRV

<400> 4
gcttatagaa ggacccctag tatggggtaa tcccctctgg gaaaccaagc cccagtactc   60

agcaggaaaa atagaatagg aaacctcaca aggacatact ttcctcccct ccagatggct   120

1

```
agccactgag gaaggaaaaa tactttcacc tgcagctaac caacagaaat tacttaaaac      180

ccttcaccaa accttccact taggcattga tagcacccat cagatggcca aattattatt      240

tactggacca ggccttttca aaactatcaa gaagatagtc aggggctgtg aagtgtgcca      300

aagaaataat                                                           310


<210>   5
<211>   103
<212>   PRT
<213>   MSRV


<220>
<221>   misc_feature
<222>   (26)..(26)
<223>   Xaa = any amino acid

<400>   5

Leu Ile Glu Gly Pro Leu Val Trp Gly Asn Pro Leu Trp Glu Thr Lys
1               5                   10                  15


Pro Gln Tyr Ser Ala Gly Lys Ile Glu Xaa Glu Thr Ser Gln Gly His
                20                  25                  30


Thr Phe Leu Pro Ser Arg Trp Leu Ala Thr Glu Glu Gly Lys Ile Leu
            35                  40                  45


Ser Pro Ala Ala Asn Gln Gln Lys Leu Leu Lys Thr Leu His Gln Thr
    50                  55                  60


Phe His Leu Gly Ile Asp Ser Thr His Gln Met Ala Lys Leu Leu Phe
65                  70                  75                  80


Thr Gly Pro Gly Leu Phe Lys Thr Ile Lys Lys Ile Val Arg Gly Cys
                85                  90                  95


Glu Val Cys Gln Arg Asn Asn
            100


<210>   6
<211>   635
<212>   DNA
<213>   MSRV

<400>   6
ccctgtatct ttaacctcct tgttaagttt gtctcttcca gaatcaaaac tgtaaaacta       60

caaattgttc ttcaaatgga gcaccagatg gagtccatga ctaagatcca ccgtggaccc      120

ctggaccggc ctgctagccc atgctccgat gttaatgaca ttgaaggcac ccctcccgag      180

gaaatctcaa ctgcacaacc cctactatgc cccaattcag cgggaagcag ttagagcggt      240

catcagccaa cctccccaac agcacttggg ttttcctgtt gagagggggg actgagagac      300
```

2

aggactagct ggatttccta ggccaacgaa gaatccctaa gcctagctgg gaaggtgact   360

gcatccacct ctaaacatgg ggcttgcaac ttagctcaca cccgaccaat cagagagctc   420

actaaaatgc taattaggca aaaataggag gtaaagaaat agccaatcat ctattgcctg   480

agagcacagc gggagggaca aggatcggga tataaaccca ggcattcgag ccggcaacgg   540

caaccccctt tgggtcccct ccctttgtat gggcgctctg ttttcactct atttcactct   600

attaaatctt gcaactgaaa aaaaaaaaaa aaaaa   635

<210> 7
<211> 77
<212> PRT
<213> MSRV

<400> 7

Pro Cys Ile Phe Asn Leu Leu Val Lys Phe Val Ser Ser Arg Ile Lys
1   5   10   15

Thr Val Lys Leu Gln Ile Val Leu Gln Met Glu His Gln Met Glu Ser
        20   25   30

Met Thr Lys Ile His Arg Gly Pro Leu Asp Arg Pro Ala Ser Pro Cys
        35   40   45

Ser Asp Val Asn Asp Ile Glu Gly Thr Pro Pro Glu Glu Ile Ser Thr
    50   55   60

Ala Gln Pro Leu Leu Cys Pro Asn Ser Ala Gly Ser Ser
65   70   75

<210> 8
<211> 32
<212> DNA
<213> MSRV

<400> 8
tggggttcca tttgtaagac catctgtagc tt   32

<210> 9
<211> 1481
<212> DNA
<213> MSRV

<400> 9
atggccctcc cttatcatac ttttctcttt actgttctct taccccccttt cgctctcact   60

gcaccccctc catgctgctg tacaaccagt agctccccctt accaagagtt tctatgaaga   120

acgcggcttc ctggaaatat tgatgcccca tcatatagga gtttatctaa gggaaactcc   180

accttcactg cccacaccca tatgccccgc aactgctata actctgccac tctttgcatg   240

catgcaaata ctcattattg gacagggaaa atgattaatc ctagttgtcc tggaggactt   300

3

```
ggagccactg tctgttggac ttacttcacc cataccagta tgtctgatgg gggtggaatt      360

caaggtcagg caagagaaaa acaagtaaag gaagcaatct cccaactgac ccggggacat      420

agcaccccta gcccctacaa aggactagtt ctctcaaaac tacatgaaac cctccgtacc      480

catactcgcc tggtgagcct atttaatacc accctcactc ggctccatga ggtctcagcc      540

caaaacccta ctaactgttg gatgtgcctc cccctgcact tcaggccata catttcaatc      600

cctgttcctg aacaatggaa caacttcagc acagaaataa acaccacttc cgtttttagta     660

ggacctcttg tttccaatct ggaaataacc catacctcaa acctcacctg tgtaaaattt      720

agcaatacta tagacacaac cagctcccaa tgcatcaggt gggtaacacc tcccacacga      780

atagtctgcc taccctcagg aatatttttt gtctgtggta cctcagccta tcattgtttg      840

aatggctctt cagaatctat gtgcttcctc tcattcttag tgcccctat gaccatctac       900

actgaacaag atttatacaa tcatgtcgta cctaagcccc acaacaaaag agtacccatt      960

cttccttttg ttatcagagc aggagtgcta ggcagactag gtactggcat tggcagtatc     1020

acaacctcta ctcagttcta ctacaaacta tctcaagaaa taaatggtga catggaacag     1080

gtcactgact ccctggtcac cttgcaagat caacttaact ccctagcagc agtagtcctt     1140

caaaatcgaa gagctttaga cttgctaacc gccaaaagag ggggaacctg tttattttta     1200

ggagaagaac gctgttatta tgttaatcaa tccagaattg tcactgagaa agttaaagaa     1260

attcgagatc gaatacaatg tagagcagag gagcttcaaa acaccgaacg ctggggcctc     1320

ctcagccaat ggatgccctg ggttctcccc ttcttaggac ctctagcagc tctaatattg     1380

ttactcctct ttggaccctg tatctttaac ctccttgtta agtttgtctc ttccagaatt     1440

gaagctgtaa agctacagat ggtcttacaa atggaacccc a                          1481
```

<210> 10
<211> 493
<212> PRT
<213> MSRV

<220>
<221> misc_feature
<222> (39)..(39)
<223> Xaa = any amino acid

<400> 10

Met Ala Leu Pro Tyr His Thr Phe Leu Phe Thr Val Leu Leu Pro Pro
1   5   10   15

Phe Ala Leu Thr Ala Pro Pro Pro Cys Cys Cys Thr Thr Ser Ser Ser
            20   25   30

Pro Tyr Gln Glu Phe Leu Xaa Arg Thr Arg Leu Pro Gly Asn Ile Asp
        35   40   45

4

```
Ala Pro Ser Tyr Arg Ser Leu Ser Lys Gly Asn Ser Thr Phe Thr Ala
    50              55              60

His Thr His Met Pro Arg Asn Cys Tyr Asn Ser Ala Thr Leu Cys Met
65              70              75                          80

His Ala Asn Thr His Tyr Trp Thr Gly Lys Met Ile Asn Pro Ser Cys
                85              90                  95

Pro Gly Gly Leu Gly Ala Thr Val Cys Trp Thr Tyr Phe Thr His Thr
            100             105             110

Ser Met Ser Asp Gly Gly Gly Ile Gln Gly Gln Ala Arg Glu Lys Gln
        115             120             125

Val Lys Glu Ala Ile Ser Gln Leu Thr Arg Gly His Ser Thr Pro Ser
    130             135             140

Pro Tyr Lys Gly Leu Val Leu Ser Lys Leu His Glu Thr Leu Arg Thr
145             150             155             160

His Thr Arg Leu Val Ser Leu Phe Asn Thr Thr Leu Thr Arg Leu His
            165             170             175

Glu Val Ser Ala Gln Asn Pro Thr Asn Cys Trp Met Cys Leu Pro Leu
        180             185             190

His Phe Arg Pro Tyr Ile Ser Ile Pro Val Pro Glu Gln Trp Asn Asn
        195             200             205

Phe Ser Thr Glu Ile Asn Thr Thr Ser Val Leu Val Gly Pro Leu Val
    210             215             220

Ser Asn Leu Glu Ile Thr His Thr Ser Asn Leu Thr Cys Val Lys Phe
225             230             235             240

Ser Asn Thr Ile Asp Thr Thr Ser Ser Gln Cys Ile Arg Trp Val Thr
            245             250             255

Pro Pro Thr Arg Ile Val Cys Leu Pro Ser Gly Ile Phe Phe Val Cys
            260             265             270

Gly Thr Ser Ala Tyr His Cys Leu Asn Gly Ser Ser Glu Ser Met Cys
        275             280             285

Phe Leu Ser Phe Leu Val Pro Pro Met Thr Ile Tyr Thr Glu Gln Asp
    290             295             300

Leu Tyr Asn His Val Val Pro Lys Pro His Asn Lys Arg Val Pro Ile
305             310             315             320
```

Leu Pro Phe Val Ile Arg Ala Gly Val Leu Gly Arg Leu Gly Thr Gly
                325   330   335

Ile Gly Ser Ile Thr Thr Ser Thr Gln Phe Tyr Tyr Lys Leu Ser Gln
            340   345   350

Glu Ile Asn Gly Asp Met Glu Gln Val Thr Asp Ser Leu Val Thr Leu
            355   360   365

Gln Asp Gln Leu Asn Ser Leu Ala Ala Val Val Leu Gln Asn Arg Arg
    370   375   380

Ala Leu Asp Leu Leu Thr Ala Lys Arg Gly Gly Thr Cys Leu Phe Leu
385   390   395   400

Gly Glu Glu Arg Cys Tyr Tyr Val Asn Gln Ser Arg Ile Val Thr Glu
            405   410   415

Lys Val Lys Glu Ile Arg Asp Arg Ile Gln Cys Arg Ala Glu Glu Leu
            420   425   430

Gln Asn Thr Glu Arg Trp Gly Leu Leu Ser Gln Trp Met Pro Trp Val
            435   440   445

Leu Pro Phe Leu Gly Pro Leu Ala Ala Leu Ile Leu Leu Leu Leu Phe
    450   455   460

Gly Pro Cys Ile Phe Asn Leu Leu Val Lys Phe Val Ser Ser Arg Ile
465   470   475   480

Glu Ala Val Lys Leu Gln Met Val Leu Gln Met Glu Pro
            485   490

<210> 11   :
<211> 32
<212> DNA
<213> MSRV

<400> 11
tcaaaatcga agagctttag acttgctaac cg   32

<210> 12
<211> 1329
<212> DNA
<213> MSRV

<220>
<221> misc_feature
<222> (594)..(594)
<223> n = a, g, c or t/u

<220>
<221> misc_feature
<222> (602)..(602)
<223> n = a, g, c or t/u

<220>
<221> misc_feature
<222> (1232)..(1232)
<223> n = a, g, c or t/u

<400> 12
tcaaaatcga agagctttag acttgctaac cgccaaaaga gggggaacct gtttattttt   60

aggggaagaa tgctgttagt atgttaatca atctggaatc attactgaga aagttaaaga   120

aatttgagat cgaatataat gtagagcaga ggaccttcaa aacactgcac cctggggcct   180

cctcagccaa tggatgccct ggactctccc cttcttagga cctctagcag ctataatatt   240

tttactcctc tttggaccct gtatcttcaa cttccttgtt aagtttgtct cttccagaat   300

tgaagctgta aagctacaaa tagttcttca aatggaaccc cagatgcagt ccatgactaa   360

aatctaccgt ggacccctgg accggcctgc tagactatgc tctgatgtta atgacattga   420

agtcacccct cccgaggaaa tctcaactgc acaacccctaa ctacactcca attcagtagg   480

aagcagttag agcagttgtc agccaacctc cccaacagta cttgggtttt cctgttgaga   540

gggtggactg agagacagga ctagctggat ttcctaggct gactaagaat cccnaagcct   600

anctgggaag gtgaccgcat ccatctttaa acatggggct tgcaacttag ctcacacccg   660

accaatcaga gagctcacta aaatgctaat caggcaaaaa caggaggtaa agcaatagcc   720

aatcatctat tgcctgagag cacagcggga aggacaagga ttgggatata aactcaggca   780

ttcaagccag caacagcaac cccctttggg tcccctccca ttgtatggga gctctgtttt   840

cactctattt cactctatta aatcatgcaa ctgcactctt ctggtccgtg tttttttatgg   900

ctcaagctga gcttttgttc gccatccacc actgctgttt gccaccgtca cagacccgct   960

gctgacttcc atccctttgg atccagcaga gtgtccactg tgctcctgat ccagcgaggt   1020

acccattgcc actcccgatc aggctaaagg cttgccattg ttcctgcatg gctaagtgcc   1080

tgggtttgtc ctaatagaac tgaacactgg tcactgggtt ccatggttct cttccatgac   1140

ccacggcttc taatagagct ataacactca ccgcatggcc caagattcca ttccttggta   1200

tctgtgaggc caagaacccc aggtcagaga angtgaggct gccaccatt tgggaagtgg   1260

cccactgcca ttttggtagc ggcccaccac catcttggga gctgtgggag caaggatccc   1320

ccagtaaca   1329

<210> 13
<211> 162
<212> PRT
<213> MSRV

<220>
<221> misc_feature

```
<222>  (26)..(26)
<223>  Xaa = any amino acid

<220>
<221>  misc_feature
<222>  (42)..(42)
<223>  Xaa = any amino acid

<220>
<221>  misc_feature
<222>  (46)..(46)
<223>  Xaa = any amino acid

<400>  13

Gln Asn Arg Arg Ala Leu Asp Leu Leu Thr Ala Lys Arg Gly Gly Thr
1               5                   10                  15


Cys Leu Phe Leu Gly Glu Glu Cys Cys Xaa Tyr Val Asn Gln Ser Gly
            20                  25                  30


Ile Ile Thr Glu Lys Val Lys Glu Ile Xaa Asp Arg Ile Xaa Cys Arg
            35                  40                  45


Ala Glu Asp Leu Gln Asn Thr Ala Pro Trp Gly Leu Leu Ser Gln Trp
    50                  55                  60


Met Pro Trp Thr Leu Pro Phe Leu Gly Pro Leu Ala Ala Ile Ile Phe
65                  70                  75                  80


Leu Leu Leu Phe Gly Pro Cys Ile Phe Asn Phe Leu Val Lys Phe Val
                85                  90                  95


Ser Ser Arg Ile Glu Ala Val Lys Leu Gln Ile Val Leu Gln Met Glu
            100                 105                 110


Pro Gln Met Gln Ser Met Thr Lys Ile Tyr Arg Gly Pro Leu Asp Arg
            115                 120                 125


Pro Ala Arg Leu Cys Ser Asp Val Asn Asp Ile Glu Val Thr Pro Pro
    130                 135                 140


Glu Glu Ile Ser Thr Ala Gln Pro Leu Leu His Ser Asn Ser Val Gly
145                 150                 155                 160


Ser Ser


<210>  14
<211>  21
<212>  DNA
<213>  MSRV

<400>  14
ggcattgata gcacccatca g                                          21
```

8

```
<210>    15
<211>    21
<212>    DNA
<213>    MSRV

<400>    15
catgtcacca gggtggaata g                                                    21


<210>    16
<211>    758
<212>    DNA
<213>    MSRV

<400>    16
ggcattgata gcacccatca gatggccaaa tcattattta ctggaccagg ccttttcaaa     60

actatcaagc agatagggcc cgtgaagcat gccaaagaaa taatcccctg ccttatcgcc    120

atgttccttc aggagaacaa agaacaggcc attacccagg ggaagactgg caactagatt    180

ttacccacat ggccaaatgt cagggatttc agcatctact agtctgggca gatactttca    240

ctggttgggt ggagtcttct ccttgtagga cagaaaagac ccaagaggta ataaaggcac    300

taatgaaata attcccagat ttggacttcc cccaggatta cagggtgaca atggccccgc    360

tttcaaggct gcagtaaccc agggagtatc ccaggtgtta ggcatacaat atcacttaca    420

ctgtgcctgg aggccacaat cctccagaaa agtcaagaaa atgaatgaaa cactcaaaga    480

tctaaaaaag ctaacccaag aaacccacat tgcatgacct gttctgttgc ctataacctt    540

actaagaatc cataactatc ccccaaaaag caggacttag cccatacgag atgctatatg    600

gatggccttt cctaaccaat gaccttgtgc ttgactgaga aatggccaac ttagttgcag    660

acatcacctc cttagccaaa tatcaacaag ttcttaaaac atcacaggga acctgtcccc    720

gagaggaggg aaaggaacta ttccaccctg gtgacatg                             758


<210>    17
<211>    25
<212>    DNA
<213>    MSRV

<400>    17
cggacatcca aagtgatggg aaacg                                                25


<210>    18
<211>    26
<212>    DNA
<213>    MSRV

<400>    18
ggacaggaaa gtaagactga gaaggc                                               26


<210>    19
<211>    26
<212>    DNA
<213>    MSRV
```

```
<400>  19
cctagaacgt attctggaga attggg                                          26


<210>  20
<211>  26
<212>  DNA
<213>  MSRV

<400>  20
tggctctcaa tggtcaaaca tacccg                                          26


<210>  21
<211>  1511
<212>  DNA
<213>  MSRV

<400>  21
cctagaacgt attctggaga attgggacca atgtgacact cagacgctaa gaaagaaacg      60

atttatattc ttctgcagta ccgcctggcc acaatatcct cttcaaggga gagaaacctg     120

gcttcctgag ggaagtataa attataacat catcttacag ctagacctct tctgtagaaa     180

ggagggcaaa tggagtgaag tgccatatgt gcaaactttc ttttcattaa gagacaactc     240

acaattatgt aaaaagtgtg gtttatgccc tacaggaagc cctcagagtc cacctcccta     300

ccccagcgtc ccctccccga ctccttcctc aactaataag gacccccctt taacccaaac     360

ggtccaaaag gagatagaca aaggggtaaa caatgaacca aagagtgcca atattccccg     420

attatgcccc ctccaagcag tgagaggagg agaattcggc ccagccagag tgcctgtacc     480

tttttctctc tcagacttaa agcaaattaa aatagaccta ggtaaattct cagataaccc     540

tgacggctat attgatgttt tacaagggtt aggacaatcc tttgatctga catggagaga     600

tataatgtta ctactaaatc agacactaac cccaaatgag agaagtgccg ctgtaactgc     660

agcccgagag tttggcgatc tttggtatct cagtcaggcc aacaatagga tgacaacaga     720

ggaaagaaca actcccacag gccagcaggc agttcccagt gtagaccctc attgggacac     780

agaatcagaa catggagatt ggtgccacaa acatttgcta acttgcgtgc tagaaggact     840

gaggaaaact aggaagaagc ctatgaatta ctcaatgatg tccactataa cacagggaaa     900

ggaagaaaat cttactgctt ttctggacag actaagggag gcattgagga agcatacctc     960

cctgtcacct gactctattg aaggccaact aatcttaaag gataagttta tcactcagtc    1020

agctgcagac attagaaaaa acttcaaaag tctgccttag gcccggagca gaacttagaa    1080

accctatttta acttggcatc ctcagttttt tataatagag atcaggagga gcaggcgaaa    1140

cgggacaaac gggataaaaa aaaaggggg ggtccactac tttagtcatg gccctcaggc    1200

aagcagactt tggaggctct gcaaaaggga aaagctgggc aaatcaaatg cctaataggg    1260

ctggcttcca gtgcggtcta caaggacact ttaaaaaaga ttatccaagt agaaataagc    1320

cgcccccttg tccatgcccc ttacgtcaag ggaatcactg gaaggcccac tgccccaggg    1380
```

10

gatgaagata ctctgagtca gaagccatta accagatgat ccagcagcag gactgagggt   1440

gcccggggcg agcgccagcc catgccatca ccctcacaga gccccgggta tgtttgacca   1500

ttgagagcca a   1511

<210>   22
<211>   352
<212>   PRT
<213>   MSRV

<400>   22

Leu Glu Arg Ile Leu Glu Asn Trp Asp Gln Cys Asp Thr Gln Thr Leu
1   5   10   15

Arg Lys Lys Arg Phe Ile Phe Phe Cys Ser Thr Ala Trp Pro Gln Tyr
                20   25   30

Pro Leu Gln Gly Arg Glu Thr Trp Leu Pro Glu Gly Ser Ile Asn Tyr
            35   40   45

Asn Ile Ile Leu Gln Leu Asp Leu Phe Cys Arg Lys Glu Gly Lys Trp
    50   55   60

Ser Glu Val Pro Tyr Val Gln Thr Phe Phe Ser Leu Arg Asp Asn Ser
65   70   75   80

Gln Leu Cys Lys Lys Cys Gly Leu Cys Pro Thr Gly Ser Pro Gln Ser
                85   90   95

Pro Pro Pro Tyr Pro Ser Val Pro Ser Pro Thr Pro Ser Ser Thr Asn
            100   105   110

Lys Asp Pro Pro Leu Thr Gln Thr Val Gln Lys Glu Ile Asp Lys Gly
            115   120   125

Val Asn Asn Glu Pro Lys Ser Ala Asn Ile Pro Arg Leu Cys Pro Leu
    130   135   140

Gln Ala Val Arg Gly Gly Glu Phe Gly Pro Ala Arg Val Pro Val Pro
145   150   155   160

Phe Ser Leu Ser Asp Leu Lys Gln Ile Lys Ile Asp Leu Gly Lys Phe
                165   170   175

Ser Asp Asn Pro Asp Gly Tyr Ile Asp Val Leu Gln Gly Leu Gly Gln
            180   185   190

Ser Phe Asp Leu Thr Trp Arg Asp Ile Met Leu Leu Leu Asn Gln Thr
            195   200   205

11

```
Leu Thr Pro Asn Glu Arg Ser Ala Ala Val Thr Ala Ala Arg Glu Phe
    210                 215                 220

Gly Asp Leu Trp Tyr Leu Ser Gln Ala Asn Asn Arg Met Thr Thr Glu
225                 230                 235                 240

Glu Arg Thr Thr Pro Thr Gly Gln Gln Ala Val Pro Ser Val Asp Pro
                245                 250                 255

His Trp Asp Thr Glu Ser Glu His Gly Asp Trp Cys His Lys His Leu
                260                 265                 270

Leu Thr Cys Val Leu Glu Gly Leu Arg Lys Thr Arg Lys Lys Pro Met
                275                 280                 285

Asn Tyr Ser Met Met Ser Thr Ile Thr Gln Gly Lys Glu Glu Asn Leu
    290                 295                 300

Thr Ala Phe Leu Asp Arg Leu Arg Glu Ala Leu Arg Lys His Thr Ser
305                 310                 315                 320

Leu Ser Pro Asp Ser Ile Glu Gly Gln Leu Ile Leu Lys Asp Lys Phe
                325                 330                 335

Ile Thr Gln Ser Ala Ala Asp Ile Arg Lys Asn Phe Lys Ser Leu Pro
                340                 345                 350


<210>   23
<211>   30
<212>   DNA
<213>   MSRV

<400>   23
tgctggaatt cgggatccta gaacgtattc                                    30


<210>   24
<211>   30
<212>   DNA
<213>   MSRV

<400>   24
agttctgctc cgaagcttag gcagactttt                                    30


<210>   25
<211>   398
<212>   PRT
<213>   MSRV

<400>   25

Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
1                 5                   10                  15
```

Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
            20   25   30

Ile Leu Glu Arg Ile Leu Glu Asn Trp Asp Gln Cys Asp Thr Gln Thr
            35   40   45

Leu Arg Lys Lys Arg Phe Ile Phe Phe Cys Ser Thr Ala Trp Pro Gln
    50   55   60

Tyr Pro Leu Gln Gly Arg Glu Thr Trp Leu Pro Glu Gly Ser Ile Asn
65   70   75   80

Tyr Asn Ile Ile Leu Gln Leu Asp Leu Phe Cys Arg Lys Glu Gly Lys
            85   90   95

Trp Ser Glu Val Pro Tyr Val Gln Thr Phe Phe Ser Leu Arg Asp Asn
            100   105   110

Ser Gln Leu Cys Lys Lys Cys Gly Leu Cys Pro Thr Gly Ser Pro Gln
        115   120   125

Ser Pro Pro Pro Tyr Pro Ser Val Pro Ser Pro Thr Pro Ser Ser Thr
    130   135   140

Asn Lys Asp Pro Pro Leu Thr Gln Thr Val Gln Lys Glu Ile Asp Lys
145   150   155   160

Gly Val Asn Asn Glu Pro Lys Ser Ala Asn Ile Pro Arg Leu Cys Pro
            165   170   175

Leu Gln Ala Val Arg Gly Gly Glu Phe Gly Pro Ala Arg Val Pro Val
            180   185   190

Pro Phe Ser Leu Ser Asp Leu Lys Gln Ile Lys Ile Asp Leu Gly Lys
    195   200   205

Phe Ser Asp Asn Pro Asp Gly Tyr Ile Asp Val Leu Gln Gly Leu Gly
    210   215   220

Gln Ser Phe Asp Leu Thr Trp Arg Asp Ile Met Leu Leu Leu Asn Gln
225   230   235   240

Thr Leu Thr Pro Asn Glu Arg Ser Ala Ala Val Thr Ala Ala Arg Glu
            245   250   255

Phe Gly Asp Leu Trp Tyr Leu Ser Gln Ala Asn Asn Arg Met Thr Thr
    260   265   270

Glu Glu Arg Thr Thr Pro Thr Gly Gln Gln Ala Val Pro Ser Val Asp
    275   280   285

13

Pro His Trp Asp Thr Glu Ser Glu His Gly Asp Trp Cys His Lys His
    290   295   300

Leu Leu Thr Cys Val Leu Glu Gly Leu Arg Lys Thr Arg Lys Lys Pro
305   310   315   320

Met Asn Tyr Ser Met Met Ser Thr Ile Thr Gln Gly Lys Glu Glu Asn
            325   330   335

Leu Thr Ala Phe Leu Asp Arg Leu Arg Glu Ala Leu Arg Lys His Thr
            340   345   350

Ser Leu Ser Pro Asp Ser Ile Glu Gly Gln Leu Ile Leu Lys Asp Lys
            355   360   365

Phe Ile Thr Gln Ser Ala Ala Asp Ile Arg Lys Asn Phe Lys Ser Leu
    370   375   380

Pro Lys Leu Ala Ala Ala Leu Glu His His His His His His
385   390   395

<210>   26
<211>   378
<212>   PRT
<213>   MSRV

<400>   26

Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg Ile Leu Glu Arg
1   5   10   15

Ile Leu Glu Asn Trp Asp Gln Cys Asp Thr Gln Thr Leu Arg Lys Lys
            20   25   30

Arg Phe Ile Phe Phe Cys Ser Thr Ala Trp Pro Gln Tyr Pro Leu Gln
        35   40   45

Gly Arg Glu Thr Trp Leu Pro Glu Gly Ser Ile Asn Tyr Asn Ile Ile
    50   55   60

Leu Gln Leu Asp Leu Phe Cys Arg Lys Glu Gly Lys Trp Ser Glu Val
65   70   75   80

Pro Tyr Val Gln Thr Phe Phe Ser Leu Arg Asp Asn Ser Gln Leu Cys
            85   90   95

Lys Lys Cys Gly Leu Cys Pro Thr Gly Ser Pro Gln Ser Pro Pro Pro
            100   105   110

```
Tyr Pro Ser Val Pro Ser Pro Thr Pro Ser Ser Thr Asn Lys Asp Pro
    115             120             125

Pro Leu Thr Gln Thr Val Gln Lys Glu Ile Asp Lys Gly Val Asn Asn
    130             135             140

Glu Pro Lys Ser Ala Asn Ile Pro Arg Leu Cys Pro Leu Gln Ala Val
145             150             155             160

Arg Gly Gly Glu Phe Gly Pro Ala Arg Val Pro Val Pro Phe Ser Leu
            165             170             175

Ser Asp Leu Lys Gln Ile Lys Ile Asp Leu Gly Lys Phe Ser Asp Asn
            180             185             190

Pro Asp Gly Tyr Ile Asp Val Leu Gln Gly Leu Gly Gln Ser Phe Asp
            195             200             205

Leu Thr Trp Arg Asp Ile Met Leu Leu Leu Asn Gln Thr Leu Thr Pro
    210             215             220

Asn Glu Arg Ser Ala Ala Val Thr Ala Ala Arg Glu Phe Gly Asp Leu
225             230             235             240

Trp Tyr Leu Ser Gln Ala Asn Asn Arg Met Thr Thr Glu Glu Arg Thr
            245             250             255

Thr Pro Thr Gly Gln Gln Ala Val Pro Ser Val Asp Pro His Trp Asp
            260             265             270

Thr Glu Ser Glu His Gly Asp Trp Cys His Lys His Leu Leu Thr Cys
            275             280             285

Val Leu Glu Gly Leu Arg Lys Thr Arg Lys Lys Pro Met Asn Tyr Ser
    290             295             300

Met Met Ser Thr Ile Thr Gln Gly Lys Glu Glu Asn Leu Thr Ala Phe
305             310             315             320

Leu Asp Arg Leu Arg Glu Ala Leu Arg Lys His Thr Ser Leu Ser Pro
            325             330             335

Asp Ser Ile Glu Gly Gln Leu Ile Leu Lys Asp Lys Phe Ile Thr Gln
            340             345             350

Ser Ala Ala Asp Ile Arg Lys Asn Phe Lys Ser Leu Pro Lys Leu Ala
            355             360             365

Ala Ala Leu Glu His His His His His His
    370             375
```

                                    15

```
<210>   27
<211>   25
<212>   DNA
<213>   MSRV

<400>   27
cttggagggt gcataaccag ggaat                                             25


<210>   28
<211>   20
<212>   DNA
<213>   MSRV

<400>   28
tgtccgctgt gctcctgatc                                                   20


<210>   29
<211>   25
<212>   DNA
<213>   MSRV

<400>   29
ctatgtcctt ttggactgtt tgggt                                            25


<210>   30
<211>   764
<212>   DNA
<213>   MSRV

<400>   30
tgtccgctgt gctcctgatc cagcacaggc gcccattgcc tctcccaatt gggctaaagg      60

cttgccattg ttcctgcaca gctaagtgcc tgggttcatc ctaatcgagc tgaacactag     120

tcactgggtt ccacggttct cttccatgac ccatggcttc taatagagct ataacactca     180

ctgcatggtc caagattcca ttccttggaa tccgtgagac caagaacccc aggtcagaga     240

acacaaggct tgccaccatg ttggaagcag cccaccacca ttttggaagc agcccgccac     300

tatcttggga gctctgggag caaggacccc aggtaacaat ttggtgacca cgaagggacc     360

tgaatccgca accatgaagg gatctccaaa gcaattggaa atgttcctcc caaggcaaaa     420

atgcccctaa gatgtattct ggagaattgg gaccaatttg accctcagac agtaagaaaa     480

aaatgactta tattcttctg cagtaccgcc ctggccacga tatcctcttc aaggggggaga     540

aacctggcct cctgagggaa gtataaatta taacaccatc ttacagctag acctgttttg     600

tagaaaagga ggcaaatgga gtgaagtgcc atatttacaa actttctttt cattaaaaga     660

caactcgcaa ttatgttaac agtgtgattt gtgttcctac acggaagccc tcagattcta     720

ctccccaccc ccggcatctc ccctgaatcc ctccccaact tatt                      764


<210>   31
<211>   800
<212>   DNA
<213>   MSRV
```

<400> 31
tgtccgctgt gctcctgatc cagcacaggc gcccattgcc tctcccaatt gggctaaagg   60

cttgccattg ttcctgcaca gctaagtgcc tgggttcatc ctaatcgagc tgaacactag   120

tcactgggtt ccacggttct cttccatgac ccatggcttc taatagagct ataacactca   180

ctgcatggtc caagattcca ttccttggaa tccgtgagac caagaacccc aggtcagaga   240

acacaaggct tgccaccatg ttggaagcag cccaccacca ttttggaagc ggcccgccac   300

tatcttggga gctctgggag caaggacccc caggtaacaa tttggtgacc acgaagggac   360

ctgaatccgc aaccatgaag ggatctccaa agcaattgga aatgttcctc ccaaggcaaa   420

aatgccccta agatgtattc tggagaattg ggaccaatct gaccctcaga cagtaagaaa   480

aaaaatgact tatattcttc tgcagtaccg cctggccacg gatatcctct caaggggga   540

gaaacctggc ctcctgaggg aagtataaat tataacacca tcttacagct agacctgttt   600

tgtagaaaag gaggcaaatg gagtgaagtg ccatatttac aaactttctt ttcattaaaa   660

gacaactcgc aattatgtaa acagtgtgat ttgtgtccta caggaagccc tcagatctac   720

ctccctaccc cggcatctcc ctgactcctt ccccaactaa taaggaccca cttcagccca   780

aacagtccaa aaggacatag   800

<210>   32
<211>   65
<212>   PRT
<213>   MSRV

<400>   32

Pro Met Ala Ser Asn Arg Ala Ile Thr Leu Thr Ala Trp Ser Lys Ile
1   5   10   15

Pro Phe Leu Gly Ile Arg Glu Thr Lys Asn Pro Arg Ser Glu Asn Thr
            20   25   30

Arg Leu Ala Thr Met Leu Glu Ala Ala His His His Phe Gly Ser Ser
        35   40   45

Pro Pro Leu Ser Trp Glu Leu Trp Glu Gln Gly Pro Gln Val Thr Ile
    50   55   60

Trp
65

<210>   33
<211>   26
<212>   DNA
<213>   MSRV

<400>   33
tcatgcaact gcactcttct ggtccg   26

17

```
<210>   34
<211>   28
<212>   DNA
<213>   MSRV

<400>   34
tcttgcacta acctccactg tccgttgg                                          28


<210>   35
<211>   28
<212>   DNA
<213>   MSRV

<400>   35
atcccccagt aacaatttgg tgaccacg                                          28


<210>   36
<211>   31
<212>   DNA
<213>   MSRV

<400>   36
tcgggtctaa gagggtactt cctttggtag g                                      31


<210>   37
<211>   25
<212>   DNA
<213>   MSRV

<400>   37
ttacgcaggt ctcagggatg agctt                                             25


<210>   38
<211>   33
<212>   DNA
<213>   MSRV

<400>   38
cggcagtagc agtcttagta tctgaagcag tta                                    33


<210>   39
<211>   28
<212>   DNA
<213>   MSRV

<400>   39
ggtacggagg gtttcatgta gttttgag                                          28


<210>   40
<211>   1247
<212>   DNA
<213>   MSRV


<220>
<221>   misc_feature
<222>   (1240)..(1240)
<223>   n = a, g, c or t/u
```

<220>
<221> misc_feature
<222> (1246)..(1246)
<223> n = a, g, c or t/u

<400> 40
atgggcagca gccatcatca tcatcatcac agcagcggcc tggtgccgcg cggcagccat   60

atggctagca tgactggtgg acagcaaatg ggtcggatcc tagaacgtat tctggagaat   120

tgggaccaat gtgacactca gacgctaaga aagaaacgat ttatattctt ctgcagtacc   180

gcctggccac aatatcctct tcaagggaga gaaacctggc ttcctgaggg aagtataaat   240

tataacatca tcttacagct agacctcttc tgtagaaagg agggcaaatg gagtgaagtg   300

ccatatgtgc aaactttctt ttcattaaga dacaactcac aattatgtaa aaagtgtggt   360

ttatgcccta caggaagccc tcagagtcca cctccctacc ccagcgtccc ctccccgact   420

ccttcctcaa ctaataagga cccccccttta acccaaacgg tccaaaagga gatagacaaa   480

ggggtaaaca atgaaccaaa gagtgccaat attccccgat tatgcccccct ccaagcagtg   540

agaggaggag aattcggccc agccagagtg cctgtacctt tttctctctc agacttaaag   600

caaattaaaa tagacctagg taaattctca gataaccctg acggctatat tgatgtttta   660

caagggttag dacaatcctt tgatctgaca tggagagata taatgttact actaaatcag   720

acactaaccc caaatgagag aagtgccgct gtaactgcag cccgagagtt tggcgatctt   780

tggtatctca gtcaggccaa caataggatg acaacagagg aaagaacaac tcccacaggc   840

cagcaggcag ttcccagtgt agaccctcat tgggacacag aatcagaaca tggagattgg   900

tgccacaaac atttgctaac ttgcgtgcta gaaggactga ggaaaactag gaagaagcct   960

atgaattact caatgatgtc cactataaca cagggaaagg aagaaaatct tactgctttt 1020

ctggacagac taagggaggc attgaggaag catacctccc tgtcacctga ctctattgaa 1080

ggccaactaa tcttaaagga taagtttatc actcagtcag ctgcagacat tagaaaaaac 1140

ttcaaaagtc tgcctaagct tgcggccgca ctcgagcacc accaccacca ccactgagat 1200

ccggctgcta acaaagcccg aaaggaagct gagttgggtn gtggcna   1247

<210> 41
<211> 1186
<212> DNA
<213> MSRV

<400> 41
atggctagca tgactggtgg acagcaaatg ggtcggatcc tagaacgtat tctggagaat   60

tgggaccaat gtgacactca gacgctaaga aagaaacgat ttatattctt ctgcagtacc   120

gcctggccac aatatcctct tcaagggaga gaaacctggc ttcctgaggg aagtataaat   180

tataacatca tcttacagct agacctcttc tgtagaaagg agggcaaatg gagtgaagtg   240

ccatatgtgc aaactttctt ttcattaaga dacaactcac aattatgtaa aaagtgtggt   300

ttatgcccta caggaagccc tcagagtcca cctccctacc ccagcgtccc ctccccgact   360

19

```
ccttcctcaa ctaataagga cccccctta acccaaacgg tccaaaagga gatagacaaa    420

ggggtaaaca atgaaccaaa gagtgccaat attccccgat tatgccccct ccaagcagtg    480

agaggaggag aattcggccc agccagagtg cctgtacctt tttctctctc agacttaaag    540

caaattaaaa tagacctagg taaattctca gataaccctg acggctatat tgatgtttta    600

caagggttag gacaatcctt tgatctgaca tggagagata taatgttact actaaatcag    660

acactaaccc caaatgagag aagtgccgct gtaactgcag cccgagagtt tggcgatctt    720

tggtatctca gtcaggccaa caataggatg acaacagagg aaagaacaac tcccacaggc    780

cagcaggcag ttcccagtgt agaccctcat tgggacacag aatcagaaca tggagattgg    840

tgccacaaac atttgctaac ttgcgtgcta gaaggactga ggaaaactag gaagaagcct    900

atgaattact caatgatgtc cactataaca cagggaaagg aagaaaatct tactgctttt    960

ctggacagac taagggaggc attgaggaag catacctccc tgtcacctga ctctattgaa   1020

ggccaactaa tcttaaagga taagtttatc actcagtcag ctgcagacat tagaaaaaac   1080

ttcaaaagtc tgcctaagct tgcggccgca ctcgagcacc accaccacca ccactgagat   1140

ccggctgcta caaagcccg aaaggaagct gagttggctg gtggca              1186
```

<210> 42
<211> 2030
<212> DNA
<213> MSRV

<400> 42
```
atggccctcc cttatcatac ttttctcttt actgttctct taccccctt cgctctcact     60

gcacccctc catgctgctg tacaaccagt agctcccctt accaagagtt tctatgaaga    120

acgcggcttc ctggaaatat tgatgcccca tcatatagga gtttatctaa gggaaactcc    180

accttcactg cccacaccca tatgccccgc aactgctata actctgccac tctttgcatg    240

catgcaaata ctcattattg acagggaaa atgattaatc ctagttgtcc tggaggactt    300

ggagccactg tctgttggac ttacttcacc cataccagta tgtctgatgg gggtggaatt    360

caaggtcagg caagagaaaa acaagtaaag gaagcaatct cccaactgac ccggggacat    420

agcacccta gcccctacaa aggactagtt ctctcaaaac tacatgaaac cctccgtacc    480

catactcgcc tggtgagcct atttaatacc accctcactc ggctccatga ggtctcagcc    540

caaaaccta ctaactgttg gatgtgcctc cccctgcact tcaggccata catttcaatc    600

cctgttcctg aacaatggaa caacttcagc acagaaataa acaccacttc cgtttttagta    660

ggacctcttg tttccaatct ggaaataacc cataccctcaa acctcacctg tgtaaaattt    720

agcaatacta tagacacaac cagctcccaa tgcatcaggt gggtaacacc tcccacacga    780

atagtctgcc taccctcagg aatattttt gtctgtggta cctcagccta tcattgtttg    840

aatggctctt cagaatctat gtgcttcctc tcattcttag tgcccctat gaccatctac    900
```

20

```
actgaacaag atttatacaa tcatgtcgta cctaagcccc acaacaaaag agtacccatt      960

cttccttttg ttatcagagc aggagtgcta ggcagactag gtactggcat tggcagtatc     1020

acaacctcta ctcagttcta ctacaaacta tctcaagaaa taaatggtga catggaacag     1080

gtcactgact ccctggtcac cttgcaagat caacttaact ccctagcagc agtagtcctt     1140

caaaatcgaa gagctttaga cttgctaacc gccaaaagag ggggaacctg tttattttta     1200

ggagaagaac gctgttatta tgttaatcaa tccagaattg tcactgagaa agttaaagaa     1260

attcgagatc gaatacaatg tagagcagag gagcttcaaa acaccgaacg ctggggcctc     1320

ctcagccaat ggatgccctg ggttctcccc ttcttaggac ctctagcagc tctaatattg     1380

ttactcctct ttggaccctg tatctttaac ctccttgtta gtttgtctc ttccagaatt     1440

gaagctgtaa agctacagat ggtcttacaa atggaacccc agatggagtc catgactaag     1500

atccaccgtg gacccctgga ccggcctgct agcccatgct ccgatgttaa tgacattgaa     1560

ggcacccctc ccgaggaaat ctcaactgca caacccctac tatgccccaa ttcagcggga     1620

agcagttaga gcggtcatca gccaacctcc ccaacagcac ttgggttttc ctgttgagag     1680

gggggactga gagacaggac tagctggatt tcctaggcca acgaagaatc cctaagccta     1740

gctgggaagg tgactgcatc cacctctaaa catggggctt gcaacttagc tcacacccga     1800

ccaatcagag agctcactaa aatgctaatt aggcaaaaat aggaggtaaa gaaatagcca     1860

atcatctatt gcctgagagc acagcgggag ggacaaggat cgggatataa acccaggcat     1920

tcgagccggc aacggcaacc ccctttgggt cccctccctt tgtatgggcg ctctgttttc     1980

actctatttc actctattaa atcttgcaac tgaaaaaaaa aaaaaaaaa                 2030


<210>    43
<211>    2055
<212>    DNA
<213>    MSRV

<400>    43
cagcaacccc ctttgggtcc cctcccattg tatgggagct ctgtttttcac tctatttcac       60

tctattaaat catgcaactg cactcttctg gtccgtgttt tttatggctc aagctgagct      120

tttgttcgcc atccaccact gctgtttgcc accgtcacag acccgctgct gacttccatc      180

cctttggatc cagcagagtg tccgctgtgc tcctgatcca gcacaggcgc ccattgcctc      240

tcccaattgg gctaaaggct tgccattgtt cctgcacagc taagtgcctg ggttcatcct      300

aatcgagctg aacactagtc actgggttcc acggttctct tccatgaccc atggcttcta      360

atagagctat aacactcact gcatggtcca agattccatt ccttggaatc cgtgagacca      420

agaaccccag gtcagagaac acaaggcttg ccaccatgtt ggaagcagcc caccaccatt      480

ttggaagcag cccgccacta tcttgggagc tctgggagca aggaccccag gtaacaattt      540

ggtgaccacg aagggacctg aatccgcaac catgaaggga tctccaaagc aatgggaaac      600

gttcccccccg aggcaaaaat gccccctagaa cgtattctgg agaattggga ccaatgtgac      660
```

21

```
actcagacgc taagaaagaa acgatttata ttcttctgca gtaccgcctg gccacaatat    720

cctcttcaag ggagagaaac ctggcttcct gagggaagta taaattataa catcatctta    780

cagctagacc tcttctgtag aaaggagggc aaatggagtg aagtgccata tgtgcaaact    840

ttcttttcat taagagacaa ctcacaatta tgtaaaaagt gtggtttatg ccctacagga    900

agccctcaga gtccacctcc ctaccccagc gtccctccc cgactccttc ctcaactaat     960

aaggacccc ctttaaccca aacggtccaa aaggagatag acaaagggt aaacaatgaa      1020

ccaaagagtg ccaatattcc ccgattatgc cccctccaag cagtgagagg aggagaattc    1080

ggcccagcca gagtgcctgt accttttct ctctcagact taaagcaaat taaaatagac     1140

ctaggtaaat tctcagataa ccctgacggc tatattgatg ttttacaagg gttaggacaa    1200

tcctttgatc tgacatggag agatataatg ttactactaa atcagacact aaccccaaat    1260

gagagaagtg ccgctgtaac tgcagcccga gagtttggcg atctttggta tctcagtcag    1320

gccaacaata ggatgacaac agaggaaaga acaactccca caggccagca ggcagttccc    1380

agtgtagacc ctcattggga cacagaatca gaacatggag attggtgcca caaacatttg    1440

ctaacttgcg tgctagaagg actgaggaaa actaggaaga agcctatgaa ttactcaatg    1500

atgtccacta taacacaggg aaaggaagaa aatcttactg cttttctgga cagactaagg    1560

gaggcattga ggaagcatac ctccctgtca cctgactcta ttgaaggcca actaatctta    1620

aaggataagt ttatcactca gtcagctgca gacattagaa aaaaacttca aaagtccgtc    1680

ttaggctcgg aacaaaactt agaaacccta ttgaacttgg caacctcggt tttttataat    1740

agagatcagg aggagcaggc agaatgggac aaatgggata aaaaaaaaag ggccaccgct    1800

ttagtcatgg ccctcaggca agcggacttt ggaggctctg gaaaagggaa aagctgggca    1860

aataggaagc ctaatagggc ttgcttccag tgcggtctac aaggacactt taaaaaagat    1920

tgtccaaata gaaataagcc gccccttgt ccatgcccct tacgtcaagg gaatcactgg      1980

aaggcccact gccccagggg atcaagatac tctgagtcag aagccattaa ccagatgatc    2040

cagcagcagg actga                                                      2055


<210>   44
<211>   1197
<212>   DNA
<213>   MSRV

<400>   44
ggacccgtag tatggggtaa tcccctccgg gaaaccaagc cccagtactc agaagaagaa    60

atagaatggg gaacctcacg aggacatggt ttcctcccct caggatggct agccactgaa    120

gaaggaaaaa tactttgct ggcagctaac caatggaaat tacttaaaac ccttcagcaa      180

accttccact taggcattga tagcacccat cagatagcca aatcattatt tactggacca    240

ggccttttca aaactatcaa gcagatagtc agggcctgtg aagtgtgcca aagaaataat    300
```

22

```
ccccctgcctt atcgccaagc tccttcagga gaacaaagaa caggcaatta cccaagagaa      360

gactggcaac tagattttat ccacatgcca aaatcacagg gatttcagtg tctactagtc      420

tgggtagata ctttcactgg ttgggcagag gccttccct gtaggacaga aaagttccaa       480

gaggtaataa aggcactagt tcatgaagta attcccagat cggacttcc ctgaggctta       540

cagagtgaca atggtcctgc tttcaaggcc acagtaaccc agggagtatc ccaggcgtta      600

ggtatagaat atcacttaca ctgcacctag aggccacaat cctcagggaa ggttgagaaa      660

atgaaacac tcaaacgaca tctaaacaag ctaacccagg aaacccacct cgcatggtct       720

gctctgttgt ctatagcctt actaagaatc caaaactctc cccaaaaggc aggacttagc      780

ccatacagaa tgctgtatgg acggtccttc ctaaccaatg accttctgct tgaccaagag      840

atggccaact tagttgcaga catcacctcc ttagccaaat atcaacaagt tcttaaaaca      900

ttacaaggag cctgtccccg agaggaggga aaagaaatat tccaccctgg tgtcatggta      960

ttagtcaagt cccttccctc taattcccca tccctagaca catcctgggg aggaccctac      1020

ccagtcattt tatctatccc aactgcggtt aaagtggctg gagtggagtc ttggatacat      1080

cacactcgaa tcaaaccctg gatactgccg aaggaacccg aaaatccagg ggacaacgct      1140

agctatttct ttgaacctct agaggatctg tgcctgctct tcaagcaaca accgtga        1197


<210>   45
<211>   1718
<212>   DNA
<213>   MSRV

<400>   45
gagaatagca gcataagttg gctggcagaa gtagggaaag acagcaagaa gtaaagaaaa       60

aaaggagaaa gtcagagaaa gaaaaaaaga gaggaagaaa caaagaagaa cttgaagaga      120

gaaagaagta gtaaagaaaa aacagtatac cctattcctt taaaagccag ggtaaatttc      180

tgtctaccta gccaaggcat attcttctta tgtggaacat caacctatat ctgcctcccc      240

actaactgga caggcaccag aaccttagtc tttctaagtc ccaacattaa cattgcccca      300

ggaaatcaga ccctattggt acctgtcaaa gctaaagtcc gtcagtgcag agccatacaa     '360

ctaatatccc tatttatagg gttaggaatg gctactgcta caggaactgg aatagccggt      420

ttatctactt cattatccta ctaccataca ctctcaaaga atttctcaga cagtttgcaa      480

gaaataatga aatctattct tactttacaa tcccaattag actctttggc agcaatgact      540

ctccaaaacc gccgaggccc acacctcctc actgctgaga aggaggact ctgcaccttc       600

ttaggggaag agtgttgttt ttacactaac cagtcaggga tagtacgaga tgccacctgg      660

catttacagg aaagggcttc tgatatcaga caatgccttt caaactctta taccaacctc      720

tggagttggg caacatggct tcttccattt ctaggtccca tggcagccat cttgctgtta      780

ctcacctttg ggccctgtat tttttaagctt cttgtcaaat ttgtttcctc taggatcgaa      840

gccatcaagc tacagatggt cttacaaatg gaaccccaaa tgagttcaac taacaacttc      900
```

23

```
taccaaggac ccctggaacg atccactggc acttccacta gcctagagat tcccctctgg     960

aagacactac aactgcaggg ccccttcttt gccctatcc agcaggaagt agctagagcg     1020

gtcatcggcc aaattcccaa cagcagttgg ggtgtcctgt ttagagggg gattgaagag     1080

tgacagcctg ctggcagcct cacagccctc gttggatctc agtgcctcct cagccttggt     1140

gcccactctg gccgtgcttg aggagccctt cagcctgcca ctgcactgtg ggagcctctt     1200

tctgggctgg acaaggccgg agccagctcc ctcagcttgc agggaggtat ggagggagag     1260

atgcaggcgg gaaccagggc tgcgcatggc gcttgcgggc cagcatgagt tccaggtggg     1320

cgtgggctcg gcgggcccca cactcgggca gtgaggggct tagcacctgg gccagacaga     1380

tgctgtgctc aacttcttcg ctgggcctta gctgccttcc ccgtggggca gggctacggg     1440

aacatgcagc ctgcccatgc ttgagccccc caccccgccg tgggttcytg cacagcccaa     1500

gcttcccgga caagcaccac cccttatcca cggtgcccag tcccatcaac cacccaaggg     1560

ttgaggagtg cgggcacaca gcgcgggatt ggcaggcagt tccacttgcg gccttggtgc     1620

gggatccact gcgtgaagcc agctgggctc ctgagtctgg tggggacttg gagaatcttt     1680

atgtctagct aagggattgt aaatacacca atcagcac                            1718
```